

IN THE CLAIMS

05/13/2010

Please amend the claims as follows:

Claim 1 (Previously presented): A method for producing upgraded coal for metallurgy comprising:

mixing a low rank coal and an organic solvent in a slurry preparation tank to prepare a raw material slurry;

aging the raw material slurry in an aging tank by heating to extract a soluble component of the low rank coal in the organic solvent to prepare an extracted slurry; and

removing the organic solvent from the extracted slurry by evaporation to produce upgraded coal for metallurgy as a solid form;

wherein hydrogen is not added to the slurry preparation tank or the aging tank and the organic solvent is not rehydrogenated.

Claim 2 (Previously presented): The method according to claim 1, wherein the solvent removal comprises:

sedimenting an insoluble component of the coal by allowing the extracted slurry to stand to separate between a supernatant containing an extracted coal, which is the extracted soluble component, and a residual coal slurry containing a residual coal, which is the sedimented insoluble component; and

removing the organic solvent from the supernatant by evaporation to produce the extracted coal as the upgraded coal for metallurgy.

Claim 3 (Previously presented): The method according to claim 1, wherein the solvent removal comprises:

sedimenting an insoluble component of the coal by allowing the extracted slurry to stand to separate between a supernatant containing an extracted coal, which is the extracted soluble component, and a residual coal slurry containing a residual coal, which is the sedimented insoluble component;

removing the organic solvent from the supernatant by evaporation to produce the extracted coal as a solid form; and

removing the organic solvent from the residual coal slurry by evaporation to produce the residual coal as a solid form.

Claim 4 (Previously presented): The method according to claim 3 further comprising:  
compounding the extracted coal and the residual coal to produce the upgraded coal for metallurgy having a controlled thermal plasticity.

Claim 5 (Previously presented): The method according to claim 4, wherein a compounding ratio of the residual coal to the upgraded coal for metallurgy is over 0% by mass and 70% by mass or less.

Claim 6 (Previously presented): The method according to claim 1, wherein a heating temperature for aging the raw material slurry is 250°C to 400°C.

Claim 7 (Previously presented): The method according to claim 1, wherein a time for aging the raw material slurry is 5 to 120 minutes.

Claim 8 (Previously presented): The method according to claim 1, wherein aging the raw material slurry is performed in a nitrogen atmosphere at 0.5 MPa or more.

Claim 9 (Previously presented): The method according to claim 1, wherein  
the organic solvent comprises a two ring aromatic compound as a main component,  
and  
has a boiling point of 200°C to 300°C at normal pressure.

Claim 10 (Previously presented): This method according to claim 1 further  
comprising recovering the organic solvent removed by evaporation and recycling the solvent  
to the slurry preparation.

Claim 11 (Previously presented): The method according to claim 10, wherein  
the recovered organic solvent is not rehydrogenated.

Claim 12 (Previously presented): The method according to claim 10, wherein  
recovering the organic solvent comprises vacuum distillation or spray drying.

Claim 13 (Previously presented): An upgraded coal for metallurgy produced by the  
method according to claim 1.

Claim 14 (Withdrawn): A method for producing a reduced metal using upgraded coal  
for metallurgy produced by extracting coal with an organic solvent, the method comprising:  
a coal upgrading step of aging the coal by heating in the organic solvent to produce  
the upgraded coal for metallurgy having higher thermal plasticity than that of the coal;  
a mixing step of mixing the upgraded coal for metallurgy and a metal oxide raw  
material containing a metal oxide to prepare a mixture; and

a reduction step of reducing the mixture by heating in a moving hearth furnace to produce a reduced metal as a reduced mixture.

Claim 15 (Withdrawn): The method according to claim 14 further comprising:  
a step of successively heating the reduced mixture in the moving hearth furnace to coagulate the reduced metal in the reduced mixture.

Claim 16 (Withdrawn): The method according to claim 14 further comprising:  
a melting step of melting the reduced mixture by heating in a melting furnace to separate between a metal and a slag; and  
a recovering step of discharging the metal to the outside of the furnace and recovering the metal as the reduced metal.

Claim 17 (Withdrawn): The method according to claim 14 further comprising:  
a reduction and melting step of reducing the mixture by heating in the moving hearth furnace to produce a reduced mixture, and then melting the reduced mixture by further heating to produce the reduced metal.

Claim 18 (Withdrawn): The method according to claim 14 further comprising:  
a reduction and melting step of reducing the mixture by heating in the moving hearth furnace to produce a reduced mixture, and then melting the reduced mixture by further heating to produce the reduced metal;  
a solidification step of solidifying the reduced metal by cooling in the moving hearth furnace to produce a reduced solid; and

a separation and recovery step of discharging the reduced solid to the outside of the furnace to separate between a metal and a slag and recover the metal as the reduced metal.

Claim 19 (Withdrawn): A method for producing a slag containing an oxidized nonferrous metal using upgraded coal for metallurgy, which is produced by extracting coal with an organic solvent, the method comprising:

a coal upgrading step of aging the coal by heating in the organic solvent to produce upgraded coal for metallurgy which has higher thermal plasticity than that of the coal;

a mixing step of mixing the upgraded coal for metallurgy and a metal oxide-containing raw material containing iron oxide and an oxidized nonferrous metal to prepare a mixture;

a reduction and melting step of reducing the iron oxide in the mixture by heating the mixture in a moving hearth furnace to produce a reduced mixture containing metallic iron, and then melting the metallic iron by heating the reduced mixture to separate between the metallic iron and an oxidized nonferrous metal slag;

a solidification step of solidifying the metallic iron in the mixture containing the oxidized nonferrous metal slag and the melted metallic iron by cooling in the moving hearth furnace to produce a reduced solid; and

a separation and recovery step of discharging the reduced solid to the outside of the furnace to separate between the metal and the slag and recover the slag as the oxidized nonferrous metal slag.

Claim 20 (Withdrawn): A reduced metal produced by the method according to claim 14.

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Claim 21 (Withdrawn): A slag containing an oxidized nonferrous metal produced by the method according to claim 19.